Volume Contents

JANUARY

Review of Oil Spill Countermeasures Technologies and Response Methods

F. R. Engelhardt	1	A perspective on the application of chemistry to oil spill response
A. B. Nordvik	5	Time window-of-opportunity strategies for oil spill planning and response
E. Tedeschi	17	Booms
R. J. Fiocco and A. Lewis	27	Oil spill dispersants
I. Buist, J. McCourt, S. Potter, S. Ross and K. Trudel	43	*In situ* burning
A. H. Walker, J. H. Kucklick and J. Michel	67	Effectiveness and environmental considerations for non-dispersant chemical countermeasures
E. H. Owens	83	The interaction of fine particles with stranded oil
K. Gaaseidnes and J. Turbeville	95	Separation of oil and water in oil spill recovery operations
F. R. Engelhardt	103	Remote sensing for oil spill detection and response
J. M. Park and M. G. Holliday	113	Occupational-health aspects of marine-oil spill response
J. M. Baker	135	Ecological effectiveness of oil spill countermeasures: how clean is clean?
T. J. Reilly	153	The use of mesocosms in marine oil spill—ecological research and development
K. Lee and F. X. Merlin	161	Bioremediation of oil on shoreline environments: development of techniques and guidelines
D. F. Dickins and I. Buist	173	Countermeasures for ice covered waters
M. Sommerville	193	Orimulsion: containment and recovery
E. C. Wayment and B. Wagstaff	203	Appropriate technology for oil spill management in developing nations

FEBRUARY

Lectures presented at the 9th International Symposium on Novel Aromatic Compounds, Hong Kong, 2–7 August 1998

T.-L. Chan, B. Halton and H. N. C. Wong	iv	Preface

© IUPAC 1999

L. T. Scott, H. E. Bronstein, D. V. Preda, R. B. M. Ansems, M. S. Bratcher and S. Hagen	209	Geodesic polyarenes with exposed concave surfaces
M. Nendel, B. Goldfuss, B. Beno, K. N. Houk, K. Hafner and H.-J. Lindner	221	Theoretical studies of novel aromatic molecules and transition states
H. Iwamura and N. Koga	231	Molecular approaches to photomagnetic materials. Metal-dependent regiospecificity in the exchange coupling of magnetic metal ions with free radical substituents on pyridine base ligands
H. Yamamoto and S. Saito	239	Designer Lewis acid catalysts for selective organic synthesis
F. Vögtle, O. Safarowsky, C. Heim, A. Affeld, O. Braun and A. Mohry	247	Catenanes, rotaxanes and pretzelanes—template synthesis and chirality
A. de Meijere, R. Haag, F.-M. Schüngel, S. I. Kozhushkov and I. Emme	253	News about acepentalene, cyclopentadienyl cations and other elusive aromatic and antiaromatic compounds
F. Diederich	265	Functional acetylenic molecular architecture
S. Shinkai and A. Ikeda	275	Novel interaction of calixarene π-systems with metal ions and fullerenes
C.-M. Che and W.-Y. Yu	281	Ruthenium-oxo and -tosylimido porphyrin complexes for epoxidation and aziridination of alkenes
R. C. Haddon and S.-Y. Chow	289	Hybridization as a metric for the reaction coordinate of the chemical reaction. Concert in chemical reactions
F. Wudl, P. A. Koutentis, A. Weitz, B. Ma, T. Strassner, K. N. Houk and S. I. Khan	295	Polyazaacenes: new tricks for old dogs

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Photochemistry (N. Serpone and A. Salinaro)	303	Terminology, relative phototonic efficiencies and quantum yields in heterogeneous photocatalysis. Part I: Suggested protocol (Technical Report)
Commission on Photochemistry (A. Salinaro, A. V. Emeline, J. Zhao, H. Hidaka, V. K. Ryabchuk and N. Serpone)	321	Terminology, relative photonic efficiencies and quantum yields in heterogeneous photocatalysis. Part II: Experimental determination of quantum yields (Technical Report)
Interdivisional Working Party for Harmonization of Quality Assurance Schemes for Analytical Laboratories (M. Thompson, S. L. R. Ellison, A. Fajgelj, P. Willetts and R. Wood)	337	Harmonized guidelines for the use of recovery information in analytical measurement (Technical Report)

© 1999 IUPAC

Commission on Oils, Fats and Derivatives (M. C. Dorbarganes, A. Cert and A. Dieffenbacher) 349 The determination of stigmastadienes in vegetable oils (Technical Report)

Commission on Oils, Fats and Derivatives (F. Lacoste, G. van Dalen and P. Dysseler) 361 The determination of cadmium in oils and fats by direct graphite furnace atomic absorption spectrometry (Technical Report)

MARCH

Lectures presented at the 5th International Conference on Heteroatom Chemistry (ICHAC-5), London, Ontario, Canada, 5–10 July 1998

K. M. Baines and J. F. King iv Preface

L.-X. Dai, X.-L. Hou and Y.-G. Zhou 369 Stereoselective synthesis of three-membered ring compounds via ylide routes

Y. H. Kim, J. C. Jung, H. C. Choi and S. G. Yang 377 Recent studies on organic synthesis mediated by radical species of peroxysulfur compounds

A. J. Kirby, I. V. Komarov, P. D. Wothers, N. Feeder and P. G. Jones 385 Stereoelectronic interactions between hetero-atoms

K. Tamao, A. Kawachi, M. Asahara and A. Toshimitsu 393 Recent developments in silicon interelement linkage: the case of functionalized silyllithium, silylenoid and sila-ylide

M. Veith, A. Rammo, S. Faber and B. Schillo 401 Metal centered molecules and their application in chemistry and physics

P. Wipf, T. Tsuchimoto and H. Takahashi 415 Synthetic applications of ortho esters

B. Zwanenburg 423 Synthetic potential of heteroatomic ring systems

J. Barluenga 431 Transferring iodine: more than a simple functional group exchange in organic synthesis

M. Driess 437 From molecular aggregates to novel organosilicon and phosphorus/arsenic compounds

J. R. Hwu, S.-C. Tsay, K. Y. King and D.-N. Horng 445 Silicon reagents in chemical transformations: the concept of 'counterattack reagent'

W. J. Leigh 453 Kinetics and mechanisms of the reactions of Si=C and Ge=C double bonds

G. Licini, M. Bonchio, G. Modena and W. A. Nugent 463 Stereoselective catalytic sulfoxidations mediated by new titanium and zirconium C_3, trialkanolamine complexes

M. Mikolajczyk, M. Mikina and R. Zurawinski 473 New phosphonate-mediated syntheses of cyclopentanoids and prostaglandins

© 1999 IUPAC

S. Rozen 481 $HOF{\cdot}CH_3CN$, an excellent oxygen transfer agent

R. Sato 489 Current topics of cyclic benzopolychalcogenides containing sulfur and selenium—synthesis and reactions

N. Tokitoh 495 New aspects in the chemistry of multiple-bonds to heteroatoms

M. Yoshifuji 503 Coordination chemistry of some low-coordinate organophosphorus compounds

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Nomenclature of Organic Chemistry (G. P. Moss) 513 Extension and revision of the von Baeyer system for naming polycyclic compounds (including bicyclic compounds) (IUPAC Recommendations 1999)

Commission on Nomenclature of Organic Chemistry (G. P. Moss) 531 Extension and revision of the nomenclature for spiro compounds (IUPAC Recommendations 1999)

APRIL

Plenary lectures presented at the 3rd International Congress of the Cuban Chemical Society, Havana, Cuba, 1–4 December 1998

L. Ballester iv Preface

R. A. Fecik, K. E. Frank, E. J. Gentry, L. A. Mitscher and M. Shibata 559 Use of combinatorial and multiple parallel synthesis methodologies for the development of anti-infective natural products

R. Roy, S. K. Das, R. Dominique, M. C. Trono, F. Hernández-Mateo and F. Santoyo-González 565 Transition metal catalyzed neoglycoconjugate syntheses

A. Fini and A. Breccia 573 Chemistry by microwaves

J. F. Fernández-Bertran 581 Mechanochemistry: an overview

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Nomenclature of Organic Chemistry (P. M. Giles Jr) 587 Revised section F: natural products and related compounds (IUPAC Recommendations 1999)

Commission on Physical Organic Chemistry (J.-L. M. Abboud and R. Notario) 645 Critical compilation of scales of solvent parameters. Part I. Pure, non-hydrogen donor solvents (Technical Report)

© 1999 IUPAC

MAY

Lectures from the 19th International Carbohydrate Symposium, San Diego, California, 9–14 August 1998

D. A. Brant	iv	Preface
N. Taniguchi, S. K. Jain, M. Takahashi, J. H. Ko, K. Sasai, E. Miyoshi and Y. Ikeda	719	Glycosyltransferases: cell surface remodeling and regulation of receptor tyrosine kinases-induced signaling
R. R. Schmidt, J. C. Castro-Palomino and O. Retz	729	New aspects of glycoside bond formation
J. B. Robbins, R. Schneerson, S. C. Szu and V. Pozsgay	745	Bacterial polysaccharide–protein conjugate vaccines
J. Ø. Duus, P. M. St. Hilaire, M. Meldal and K. Bock	755	Carbohydrate chemistry: synthetic and structural challenges towards the end of the 20th century
R. M. Brown Jr	767	Cellulose structure and biosynthesis
B. Imperiali, S. E. O'Connor, T. Hendrickson and C. Kellenberger	777	Chemistry and biology of asparagine-linked glycosylation
Y. Inoue and S. Inoue	789	Diversity in sialic and polysialic acid residues and related enzymes

Plenary Lectures from the 15th International Conference on Chemical Education, Cairo, Egypt, 9–14 August 1998

J. J. Lagowski	vi	Preface
R. Hoffmann	801	Chemistry in culture
H. Chuang and M. A. Arnold	803	Radioluminescent sources for optical chemical sensors
H. Bouma	811	The tension between science and religion: are these mutually hostile disciplines?
J. D. Bradley	817	Hands-on practical chemistry for all
Y. Takeuchi, H. Hosoya, H. Yoshida and M. M. Ito	825	Virtual chemical education—novel teaching materials by means of the Internet
W. Beasley	835	New competencies for new times: teacher professional development beyond 2000
J. J. Lagowski	845	The role of distance learning in chemical education
S. W. Bennett	851	Skills taxonomy driver for designing an independent learning course in environmental chemistry
A. F. M. Fahmy and J. J. Lagowski	859	The use of a systemic approach in teaching and learning chemistry for the 21st century

© 1999 IUPAC

A. E. Fischli 865 Chemical education and the pharmaceutical industry

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Equilibrium Data (R. H. Byrne and S. H. Laurie) 871 Influence of pressure on chemical equilibria in aqueous systems—with particular reference to seawater (Technical Report)

Commission on Electroanalytical Chemistry (A. G. Fogg and J. Wang) 891 Terminology and convention for electrochemical stripping analysis (Technical Report)

Commission on Microchemical Techniques and Trace Analysis (J. Szpunar and R. Lobinski) 899 Species-selective analysis for metal–biomacromolecular complexes using hyphenated techniques (Technical Report)

JUNE

Lectures from the 7th International Chemistry Conference in Africa & 34th Convention of the South African Chemical Institute, Durban, South Africa, 6–10 July 1998

T. M. Letcher iv Preface

B. M. Abegaz, B. T. Ngadjui, M. Bezabih and L. K. Mdee 919 Novel natural products from marketed plants of eastern and southern Africa

P. Atkins 927 Chemistry: the great ideas

P. Day 931 Chemistry and the synthesis of novel materials

J. Gmehling 939 Group contribution methods—ideal tools for the synthesis and design of separation processes

D. D. Macdonald 951 Passivity—the key to our metals-based civilization

J. P. Michael, C. B. de Koning, D. Gravestock, G. D. Hosken, A. S. Howard, C. M. Jungmann, R. W. M. Krause, A. S. Parsons, S. C. Pelly and T. V. Stanbury 979 Enaminones: versatile intermediates for natural product synthesis

K. C. Nicolaou, D. Hepworth, N. P. King and M. R. V. Finlay 989 Chemistry, biology and medicine of selected tubulin polymerizing agents

K. V. Sane 999 Cost-effective science education in the 21st century—the role of educational technology

R. H. Simoyi 1007 Pattern formation and symmetry-breaking bifurcations fueled by dissipation of chemical energy: a possible model for morphogenesis?

© 1999 IUPAC

S. O. Wandiga 1019 Review of crystallographic and molecular structures of complexes formed between N,N′-dialkyloxamides, N,N′-dialkyldithio-oxamides, N,N′-dialkylmalonamides, N,N′-dialkyldithiomalonamides, N,N′-dialkylsuccinamides, and toluene, 3,4-dithiol with Group VB and Group IV metal halides

Plenary and Invited Lectures from the 21st IUPAC Symposium on The Chemistry of Natural Products (ISCNP-21), Bejing, China, 11–16 October 1998

X.-T. Liang vi Preface

Plenary Lectures

J. P. Kutney 1025 Biotechnology and synthetic chemistry—routes to clinically important compounds

L.-X. Dai, Y.-R. Lin, X.-L. Hou and Y.-G. Zhou 1033 Stereoselective reactions with imines

Invited Lectures

H. N. C. Wong, P. Yu and C.-Y. Yick 1041 The use of furans in natural product syntheses

K.-H. Lee and S. L. Morris-Natschke 1045 Recent advances in the discovery and development of plant-derived natural products and their analogs as anti-HIV agents

S. Itô and T. Tsunoda 1053 New Mitsunobu reagents in the C–C bond formation. Application to natural product synthesis

K. Shiomi, H. Tomoda, K. Otoguro and S. Ōmura 1059 Meroterpenoids with various biological activities produced by fungi

J.-E. Bäckvall 1065 Synthesis of natural products via stereocontrolled palladium-catalyzed reactions

M. S. Chorghade, M. K. Gurjar, S. Adhikari, K. Sadalapure, S. V. S. Lalitha, A. M. S. Murugaiah and P. R. Krishna 1071 Synthesis of (*2S, 5S*)-*trans*-5-(4-fluorophenoxymethyl)-2-(1-N-hydroxy ureidyl-3-butyn-4-yl)-tetrahydrofuran—(CMI-977)

M. S. Chorghade 1075 Professor Sir Derek Harold Richard Barton—*in memoriam*

Atta-ur-Rahman and M. I. Choudhary 1079 Recent studies on bioactive natural products

M. Fatima das G. F. Da Silva, S. M. M. Agostinho, J. R. de Paula, J. O. Neto, I. Castro-Gamboa, E. R. Filho, J. B. Fernandes and P. C. Vieira 1083 Chemistry of *Toona ciliata* and *Cedrela odorata* graft (Meliaceae): chemosystematic and ecological significance

G. A. Cordell and Y. G. Shin 1089 Finding the needle in the haystack. The dereplication of natural product extracts

© 1999 IUPAC

E. Winterfeldt	1095	Marine natural products—synthetic exercises and biological activity
C.-j. Chang, C. L. Ashendel, T. C. K. Chan, R. L. Geahlen, J. McLaughlin and D. J. Waters	1101	Oncogene signal transduction inhibitors from Chinese medicinal plants
C. Szántay	1105	Resolution, chiral synthesis or what? Studies in alkaloid chemistry
H. Shibuya, K. Ohashi and I. Kitagawa	1109	Search for pharmacological leads from tropical rainforest plants
T. Nomura	1115	The chemistry and biosynthesis of isoprenylated flavonoids from moraceous plants
D.-Q. Yu	1119	Recent works on anti-tumor constituent from Annonaceae plants in China
J. Kobayashi, M. Tsuda and M. Ishibashi	1123	Bioactive products from marine micro- and macro-organisms
G. D. Prestwich, I. Abe, Y. F. Zheng, B. J. Robustell and T. Dang	1127	Enzymatic cyclization of squalene analogs
H. Seto	1133	Structural studies of complicated natural products by new NMR techniques
Y.-L. Wu, H.-B. Chen, K. Jiang, Y. Li, F. Shan, D.-Y. Wang, Y.-F. Wang, W.-M. Wu, Y. Wu, Z.-J. Yao, Z.-Y. Yue and C.-M. Zhou	1139	Interaction of biomolecules with qinghaosu (artemisinin) and its derivatives in the presence of ferrous iron—an exploration of antimalarial mechanism
Z.-J. Yang, H.-Y. Zhang, J.-M. Min, L. T. Ma and L.-H. Zhang	1143	Synthesis and enzymatic stability of oligonucleotides consisting of isonucleosides
L. Zeng, J. Su, Y. Zhong, X. Fu, T. Peng, Y. Zhu, Y. Meng, Y. Cen, X. Xu, Y. Zheng and G. Wang	1147	Search for new compounds and biologically active substances from Chinese marine organisms
L. Hu, Z. Chen, X. Cheng and Y. Xie	1153	Chemistry of ginkgolides: structure–activity relationship as PAF antagonists
H. Wu, G. Wu, X. Huang, F. He and S. Jiang	1157	Purification, characterization and structural study of the neuro-peptides from scorpion *Buthus martensi* Karsch
Y.-F. Zhao and P.-S. Cao	1163	Why nature chose α-amino acids
	i	Erratum

JULY

Lectures from the 15th International Conference on Chemical Thermodynamics, Porto, Portugal, 26 July–1 August 1998

M. A. V. Ribeiro da Silva	iv	Preface

© 1999 IUPAC

S. I. Sandler	1167	Unusual chemical thermodynamics
J. C. G. Calado and J. N. Canongia Lopes	1183	The building-up of phase diagrams
J. A. R. Renuncio, A. Cabañas and C. Pando	1197	Calorimetry in the near-critical and supercritical regions. Nitrous oxide + hydrocarbon mixtures
K. P. Murphy, B. M. Baker, S. P. Edgcomb and J. R. Horn	1207	Structural energetics of serine protease inhibition
R. D. Weir	1215	Thermophysics of advanced engineering materials
E. P. K. Currie, J. Van der Gucht, O. V. Borisov and M. A. Cohen Stuart	1227	Stuffed brushes: theory and experiment
P. A. G. O'Hare	1243	Thermochemistry of silicon-containing materials
M. M. Bizarro, B. J. Costa Cabral, R. M. Borges dos Santos and J. A. Martinho Simões	1249	Substituent effects on the O–H bond dissociation enthalpies in phenolic compounds: agreements and controversies
M. A. V. Ribeiro da Silva	1257	Thermochemistry of substituted pyridines and analogous heterocycles: the enthalpic increments for a group additivity scheme
V. Ya. Leonidov and M. Yu. Furkaluk	1267	Thermochemistry of some aqueous ions
H. Piekarski	1275	Application of calorimetric methods to investigations of interactions in solutions
W. Zielenkiewicz	1285	Aqueous solutions of pyrimidine nucleic acid bases. Solute–solvent interactions
G. M. Mrevlishvili, T. Mdzinarashvili, M. Al-Zaza, L. Tsinadze, D. Tushishvili and G. Razmadze	1291	The thermodynamic basis of the mechanisms of bacterial virus infection
M. Nunes da Ponte, P. J. Carmelo, J. A. Lopes and P. Simões	1301	Phase equilibrium data needs for the design of supercritical fluid extraction columns

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on High Temperature Materials and Solid State Chemistry (M. Kizilyalli, J. Corish and R. Metselaar)	1307	Definitions of terms for diffusion in the solid state (IUPAC Recommendations 1999)
Commission on Nomenclature of Organic Chemistry (H. A. Favre, K.-H. Hellwich, G. P. Moss, W. H. Powell and J. G. Traynham)	1327	Corrections to *A Guide to IUPAC Nomenclature of Organic Compounds (IUPAC Recommendations 1993)*

© 1999 IUPAC

Commission on General Aspects of Analytical Chemistry (D. Thorburn Burns and A. Townshend)	1331	Classification and use of terms for amplification and related reactions (IUPAC Recommendations 1999)
Commission on Microchemical Techniques and Trace Analysis (G. Friedbacher and H. Fuchs)	1337	Classification of scanning probe microscopies (Technical Report)
Commission on Agrochemicals and the Environment (J. B. Unsworth, R. D. Wauchope, A. W. Klein, E. Dorn, B. Zeeh, S. M. Yeh, M. Akerblom, K. D. Racke and B. Rubin)	1359	IUPAC Reports on pesticides (41). Significance of the long range transport of pesticides in the atmosphere (Technical Report)

AUGUST

Plenary and invited lecturers from the 10th IUPAC Symposium on Organo-Metallic Chemistry Directed Towards Organic Synthesis (OMCOS 10), Versailles, France, 18–22 July 1999

C. Bruneau	iv	Preface
J. Barluenga	1385	Recent advances in selective organic synthesis mediated by transition metal complexes
S. Blechert	1393	Olefin metathesis—recent applications in synthesis
L.-X. Dai, X.-L. Hou, W.-P. Peng, S.-L. You and Y.-G. Zhou	1401	The application of ligands with planar chirality in asymmetric synthesis
D. A. Evans, T. Rovis and J. S. Johnson	1407	Chiral copper (II) complexes as Lewis acids for catalyzed cycloaddition, carbonyl addition, and conjugate addition reactions
J. F. Hartwig	1417	Approaches to catalyst discovery. New carbon–heteroatom and carbon–carbon bond formation
P. Kocovský, A. V. Malkov, Š. Vyskocil and G. C. Lloyd-Jones	1425	Transition metal catalysis in organic synthesis: reflections, chirality and new vistas
R. C. Larock	1435	Palladium-catalyzed annulation
P. W. N. M. van Leeuwen, P. C. J. Kamer and J. N. H. Reek	1443	The bite angle makes the catalyst
S. Maiorana, E. Licandro, L. Capella, D. Perdicchia and A. Papagni	1453	Chiral nitrogen-stabilized Fischer carbene complexes: an efficient tool in the stereocontrolled elaboration of additional stereogenic centers
C. Aubert, O. Buisine, M. Petit, F. Slowinski and M. Malacria	1463	Cobalt-mediated cyclotrimerization and cycloisomerization reactions. Synthetic applications

© 1999 IUPAC

I. Manners	1471	Ring-opening polymerization of strained metallocenophanes: a new route to high molecular weight poly(metallocenes)
C. Moberg, U. Bremberg, K. Hallman, M. Svensson, P.-O. Norrby, A. Hallberg, M. Larhed and I. Csöregh	1477	Selectivity and reactivity in asymmetric allylic alkylation
F. Naso, F. Babudri and G. M. Farinola	1485	Organometallic chemistry directed towards the synthesis of electroactive materials: stereoselective routes to extended polyconjugated systems
R. Noyori and T. Ohkuma	1493	Rapid, productive and stereoselective hydrogenation of ketones
M. T. Reetz	1503	Strategies for the development of enantioselective catalysts
F. Sato, H. Urabe and S. Okamoto	1511	Bicyclization of dienes, enynes, and diynes with Ti(II) reagent. New developments towards asymmetric synthesis
B. Chauder, L. Green and V. Snieckus	1521	The directed *ortho* metalation–transition metal–catalyzed reaction symbiosis in heteroaromatic synthesis
A. Togni, N. Bieler, U. Burckhardt, C. Köllner, G. Pioda, R. Schneider and A. Schnyder	1531	Recent studies in asymmetric catalysis using ferrocenyl ligands
J. Tsuji	1539	Recollections of organopalladium chemistry

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Committee on Printed and Electronic Publications. Working Party on Spectroscopic Data Standards (JCAMP-DX) (P. Lampen, J. Lambert, R. J. Lancashire, R. S. McDonald, P. S. McIntyre, D. N. Rutledge, T. Fröhlich and A. N. Davies)	1549	An extension to the JCAMP-DX standard file format, JCAMP-DX V.5.01 (IUPAC Recommendations 1999)
Commission on Nomenclature Of Inorganic Chemistry (A. Salzer)	1557	Nomenclature of organometallic compounds of the transition elements (IUPAC Recommendations 1999)
Committee on Printed and Electronic Publications. Working Party on the Internet and IUPAC Publications (A. N. Davies, S. R. Heller and J. W. Jost)	1587	Guidelines for the use of the Internet by IUPAC bodies (Technical Report)
Commission on Atomic Weights and Isotopic Abundances (R. D. Vocke Jr)	1593	Atomic weights of the elements 1997 (Technical Report)
	1609	Erratum

© 1999 IUPAC

SEPTEMBER

Lectures from the 2nd IUPAC International Conference on Biodiversity, Belo Horizonte, Brazil, 11–15 July 1999

A. Braga de Oliveira and F. C. Braga	iv	Preface
A. D. Kinghorn, N. R. Farnsworth, D. D. Soejarto, G. A. Cordell, J. M. Pezzuto, G. O. Udeani, M. C. Wani, M. E. Wall, H. A. Navarro, R. A. Kramer, A. T. Menendez, C. R. Fairchild, K. E. Lane, S. Forenza, D. M. Vyas, K. S. Lam and Y.-Z. Shu	1611	Novel strategies for the discovery of plant-derived anticancer agents
G. M. Cragg, M. R. Boyd, R. Khanna, R. Kneller, T. D. Mays, K. D. Mazan, D. J. Newman and E. A. Sausville	1619	International collaboration in drug discovery and development: the NCI experience
O. R. Gottlieb and M. R. de M. B. Borin	1635	Bioconnectivity: a blueprint for biodiversity?
A. Kawamura, J. Guo, F. Maggiali, N. Berova and K. Nakanishi	1643	Structure of 'endogenous ouabain'
H. Wagner	1649	New approaches in phytopharmacological research
R. N. Young	1655	Importance of biodiversity to the modern pharmaceutical industry
R. Braz-Filho	1663	Brazilian phytochemical diversity: bioorganic compounds produced by secondary metabolism as a source of new scientific development, varied industrial applications and to enhance human health and the quality of life
S. Omura, M. Hayashi and H. Tomoda	1673	Recent progress of the research on novel microbial metabolites
S. D. J. Pena	1683	Single-tube single-colour multiplex PCR amplification of 10 polymorphic microsatellites (ALF10): a new powerful tool for DNA profiling

Lectures from the 26th International Conference on Solution Chemistry (26ICSC), Fukuoka, Japan, 26–31 July 1999

M. Nakahara	vi	Preface
T. Asano	1691	Kinetics in highly viscous solutions: dynamic solvent effects in 'slow' reactions

© 1999 IUPAC

J. Barthel, H.-J. Gores, R. Neueder and A. Schmid 1705 Electrolyte solutions for technology—new aspects and approaches

I. Bertini, A. Rosato and P. Turano 1717 Solution structure of paramagnetic metalloproteins

H. Sigel 1727 Metal ion-binding properties of the antiviral nucleotide analogue 9-[2-(phosphonomethoxy)ethyl]adenine (PMEA). Why is its diphosphorylated form, PMEApp^{4-}, initially a better substrate for nucleic acid polymerases than (2′-deoxy)-adenosine 5′-triphosphate (dATP^{4-}/ATP^{4-})?

T. Yamaguchi 1741 New horizons in hydrogen bonded clusters in solution

J. R. Winkler, A. J. Di Bilio, N. A. Farrow, J. H. Richards and H. B. Gray 1753 Electron tunneling in biological molecules

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on High Temperature Materials and Solid State Chemistry (R. Metselaar and D. S. Yan) 1765 Terminology for compounds in the Si-Al-O-N system (IUPAC Recommendations 1999)

Commission on Electroanalytical Chemistry (S. Kihara, Z. Yoshida, H. Aoyagi, K. Maeda, O. Shirai, Y. Kitatsuji and Y. Yoshida) 1771 A critical evaluation of the redox properties of uranium, neptunium and plutonium ions in acidic aqueous solutions (Technical Report)

1809 Errata

OCTOBER

Plenary and selected topical lectures presented at the 14th International Symposium on Plasma Chemistry, Prague, Czech Republic, 2–6 August 1999

M. Hrabovský iv Preface

M. Cacciatore 1809 Some fundamental aspects of elementary gas-surface interactions

U. Kogelschatz, B. Eliasson and W. Egli 1819 From ozone generators to flat television screens: history and future potential of dielectric-barrier discharges

B. M. Penetrante, R. M. Brusasco, B. T. Merritt and G. E. Vogtlin 1829 Environmental applications of low-temperature plasmas

I. Revel, Ph. Belenguer, J. P. Boeuf and L. C. Pitchford 1837 Modelling non-thermal plasmas generated in glow discharges

T. Sakuta and T. Ishigaki 1845 Non-equilibrium effects in pulse modulated induction thermal plasma for advanced material processing

© 1999 IUPAC

Yu. V. Tsvetkov	1853	Plasma metallurgy: current state, problems and prospects
R. P. Brinkman, M. Kratzer and H. Schmidt	1863	Simulation of plasma processes for microelectronic fabrication
U. R. Kortshagen, U. V. Bhandarkar, M. T. Swihart and S. L. Girshick	1871	Generation and growth of nanoparticles in low-pressure plasmas
G. Bonizzoni	1879	Destruction of organo-halogenated compounds by DC non-transferred arc plasma
R. J. Munz, T. Addona and A.-C. da Cruz	1889	Application of transferred arcs to the production of nanoparticles
H. Nishiyama	1899	Magnetic control of homogeneous and dust-laden plasma jets
M. Vardelle and P. Fauchais	1909	Plasma spray processes: diagnostics and control?

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Physical Organic Chemistry (V. I. Minkin)	1919	Glossary of terms used in theoretical organic chemistry (IUPAC Recommendations 1999)
Commission on Oils, Fats and Derivatives (D. Berner and A. Dieffenbacher)	1983	Determination of mono- and diacylglycerols in edible oils and fats by high performance liquid chromatography and evaporative light scattering detector: Results of collaborative studies and the standardised method (Technical Report)
Commission on Atmospheric Chemistry (R. H. Brown, M. D. Wright and N. T. Plant)	1993	The use of diffusive sampling for monitoring of benzene, toluene and xylene in ambient air (Technical Report)

NOVEMBER

Lectures presented at the 4th International Symposium on Functional Dyes—Science and Technology of Functional π-electron Systems, Osaka, Japan, 31 May–4 June 1999

E. Osawa, Y. Shirota and Z. Yoshida	iv	Preface
J. L. Sessler, N. A. Tvermoes, J. Davies, P. Anzenbacher, Jr., K. Jursíková, W. Sato, D. Seidel, V. Lynch, C. B. Black, A. Try, B. Andrioletti, G. Hemmi, T. D. Mody, D. J. Magda and V. Král	2009	Expanded porphyrins. Synthetic materials with potential medical utility
G. Höfle, N. Glaser, T. Leibold and M. Sefkow	2019	Epothilone A–D and their thiazole-modified analogues as novel anticancer agents

© 1999 IUPAC

T. A. Lyle	2025	Effective use of phenyl and heterocyclic rings: Synthesis of inhibitors of HIV-RT and thrombin
H. Sugimoto	2031	Structure–activity relationships of acetylcholinesterase inhibitors: Donepezil hydrochloride for the treatment of Alzheimer's Disease
K. Zimmermann, P. C. Waldmeier and W. G. Tatton	2039	Dipenzoxepines as treatments for neurodegenerative diseases
Y. Tabata and Y. Ikada	2047	Biological functions of fullerene
Y. Wada	2055	A prospect for single molecule information processing devices
S. Barth, H. Bässler, D. Hertel, V. I. Nikitenko and U. Wolf	2067	Optoelectronic processes in π-conjugated oligomers and polymers
T. Iyoda, M. M. Matsushita and T. Kawai	2079	Redox-tunable pyridium assemblies and their interactive spin-based functions
Z. H. Kafafi, H. Murata, L. C. Picciolo, H. Mattoussi, C. D. Merritt, Y. Iizumi and J. Kido	2085	Electroluminescent properties of functional π-electron molecular systems
M. A. Baldo, M. E. Thompson and S. R. Forrest	2095	Phosphorescent materials for application to organic light omitting devices
S. Akimoto, T. Yamakazi, I. Yamazaki, A. Nakano and A. Osuka	2107	Ultrafast excitation transfer and relaxation in linear and crossed-linear arrays of porphyrins
D. M. Walba, L. Xiao, P. Keller, R. Shao, D. Link and N. A. Clark	2117	Ferroelectric liquid crystals for second order nonlinear optics
N. Grobert, J. P. Hare, W.-K. Hsu, H. W. Kroto, M. Terrones, D. R. M. Walton and Y. Q. Zhu	2125	New advances in the creation of nanostructural materials
T. Ikeda and Y. Wu	2131	Photoinduced alignment behavior of polymer liquid crystals containing azobenzene moieties in the side chain
M. R. Bryce, T. Finn, A. J. Moore, A. S. Batsanov and J. A. K. Howard	2137	New redox materials based on functionalized 9,10-anthracenediylidenes
M. J. Cook	2145	Phthalocyanine thin films
P. Bäuerle, U. Mitschke, G. Grüner and G. Rimmel	2153	Structure–property relationships in functional conjugated oligomers

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on Microchemical Techniques and Trace Analysis (B. Ya. Spivakov, T. A. Maryutina and H. Muntau)	2161	Phosphorous speciation in water and sediments (Technical Report)

© 1999 IUPAC

Commission on Polymer Characterization and Properties (M. Mochizuki, T. Hayashi, K. Nakayama and T. Masuda)	2177	Studies on biodegradable poly(hexano-6-lactone) fibers: Part 2. Environmental degradation (Technical Report)
Commission on Spectrochemical and Other Optical Procedures for Analysis (G. Gauglitz and D. S. Moore)	2189	Nomenclature, symbols, units, and their usage in spectrochemical analysis—XVII. Laser-based molecular spectrometry for chemical analysis: absorption (IUPAC Recommendations 1999)

DECEMBER

Lectures presented at the 12th International Symposium on Carotenoids, Cairns, Australia, 18–23 July 1999

T. A. Moore, A. L. Moore and D. Gust	iv	Preface
D. DellaPenna	2205	Carotenoid synthesis and function in plants: Insights from mutant studies in *Arabidopsis*
D. M. Deming and J. W. Erdman Jr	2213	Mammalian carotenoid absorption and metabolism
H. Hashimoto, T. Nakashima, K. Hattori, T. Yamada, T. Mizoguchi, Y. Koyama and T. Kobayashi	2225	Structures and non-linear optical properties of polar carotenoid analogues
J. T. Landrum, R. A. Bone, Y. Chen, C. Herrero, C. M. Llerena and E. Twarowska	2237	Carotenoids in the human retina
J. Lugtenburg, A. F. L. Creemers, M. A. Verhoeven, A. A. C. van Wijk, P. J. E. Verdegem, M. C. F. Monnee and F. J. H. M. Jansen	2245	Synthesis of ^{13}C-labeled carotenoids and retinoids
H. D. Martin, C. Ruck, M. Schmidt, S. Sell, S. Beutner, B. Mayer and R. Walsh	2253	Chemistry of carotenoid oxidation and free radical reactions
A. Z. Mercadante	2263	New carotenoids: Recent progress
H. Nishino, H. Tokuda, Y. Satomi, M. Masuda, P. Bu, M. Onozuka, S. Yamaguchi, Y. Okuda, J. Takayasu, J. Tsuruta, M. Okuda, E. Ichiishi, M. Murakoshi, T. Kato, N. Misawa, T. Narisawa, N. Takasuka and M. Yano	2273	Cancer prevention by carotenoids
M. Rohmer	2279	The mevalonate-independent methylerythritol 4-phosphate (MEP) pathway for isoprenoid biosynthesis, including carotenoids

© 1999 IUPAC

A. Rüttimann 2285 Dienolether condensations—a powerful tool in carotenoid synthesis

A. Wada and M. Ito 2295 Stereoselective synthesis of retinoid isomers using tricarbonyliron complex and its application

IUPAC Recommendations on Nomenclature and Symbols and Technical Reports from Commissions

Commission on General Aspects of Analytical Chemistry (J. (K.) F. Van Staden) 2303 Analytical aspects of chemical process control. Part 1. Fundamentals (Technical Report)

Commission on Radiochemistry and Nuclear Techniques (N. E. Holden) 2309 Temperature dependence of the Westcott *g*-factor for neutron reactions in activation analysis (Technical Report)

Commission on Polymer Characterization and Properties (C. Dehennau and D. R. Moore) 2317 The influence of reprocessing on the structure–property characteristics of a plasticized poly(vinyl chloride) (PVC-p) compound (Technical Report)

Commission on Biophysical Chemistry and Commission on Electroanalytical Chemistry (D. R. Thévenot, K. Toth, R. A. Durst and G. S. Wilson) 2333 Electrochemical biosensors: Recommended definition and classification (Technical Report)

Commission on Nomenclature and Terminology (D. Maclean, J. J. Baldwin, V. T. Ivanov, Y. Kato, A. Shaw, P. Schneider and E. M. Gordon) 2349 Glossary of terms used in combinatorial chemistry (Technical Report)

Commission on Colloid and Surface Chemistry Including Catalysis (R. A. Schoonheydt, T. Pinnavaia, G. Lagaly and N. Gangas) 2367 Pillared clays and pillared layered solids (Technical Report)

i Index to Contents of Volume 71

xxi Author Index

xxv Subject Index

© 1999 IUPAC